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MANITOBA

ACTUARIAL REPORT

on the

GROUP INSURANCE PLAN

for

EMPLOYEES

of

PARTICIPATING MUNICIPALITIES IN MANITOBA

as at

JANUARY 1st, 1983

Chairman and Members of the
Municipal Employees Benefits Board,
Winnipeg, Manitoba.

1. Purpose

The Municipal Act was amended by the legislation in 1975. This amendment required each municipality to establish a pension plan for certain of their employees. The amendment permitted such a Plan to provide insurance protection. In 1976, Regulations were approved which created the Municipal Employee Benefits Program and gave the Board responsibility for administering the Program. The Regulations also required a periodic actuarial report on the status of the Insurance Fund part of the Municipal Employees Benefits Fund. The first report was made as at January 1st, 1980 (1980 Report). Subsequent reports are required to be made at least once every 3 years thereafter. Therefore, an actuarial valuation of the Insurance Fund Part of the Municipal Employee Benefits Fund has been made as at January 1st, 1983.

The purpose of these reports is to:

(a) indicate the financial position of the Insurance Fund Part of the Municipal Employee Benefits Fund (Fund).

(b) evaluate the sufficiency of the contribution rates currently being paid by employees and participating employers, and

(c) indicate the apparent break even premium rates for the insurance plan and where appropriate, for each type of insurance protection based on the present and possible future distributions of insurance by age and sex.

In this Report, all references to Insurance Plan mean the Group Insurance Plan for Employees of Participating Municipalities in Manitoba. References to the Pension Plan mean the Pension Plan for Employees of Participating Municipalities in Manitoba.

2. Sources of Information

The information on which the valuation is based included:

(a) A diskette which provided information for each employee who was a member of the Fund at any time during the valuation period. Details of the information included: social insurance number, section code, name, sex, date of birth, salary received in 1982, proportion of the year that each employee worked in 1982, multiple of salary code and insurance amount.

(b) A list which provided information for each employee at December 31st, 1982 who was receiving a waiver of contribution benefit as a result of total disability. This information included: name, municipality, sex, social insurance number, date of birth, effective date, amount of insurance, status code and date of reduction.

(c) A diskette which provided information for each retired employee who was insured under the Insurance Plan. The information provided included: name, social insurance number, municipality code, sex, date of birth, sex and date of birth of beneficiary, beneficiary relationship, type of retirement and insurance amount.

(d) Copies of the Auditor's Reports and Financial Statements for the Fund for the policy years ending December 31st, 1980, December 31st, 1981, and December 31st, 1982.

(e) A copy of Group Policy No. GR 11344 issued by the Prudential Assurance Company Limited to the Board (Policy).

(f) A copy of the Municipal Act, as amended to date.

(g) Copies of financial statements prepared by The Prudential Assurance Company Limited. These statements provided financial information for the policy years ending December 31st, 1980, December 31st, 1981, and December 31st, 1982.

(h) Copies of the Actuarial Reports on the financial position of the Pension Plan for Employees of Participating Municipalities in Manitoba as at January 1st, 1977 (1977 Pension Report), January 1st, 1980 (1980 Pension Report), and January 1st, 1983 (1983 Pension Report).

(i) A copy of the Actuarial Report on the Insurance Plan for Employees of Participating Municipalities in Manitoba as at January 1st, 1980 (1980 Report).

Data checks were performed to ensure reasonable accuracy and completeness of the information provided. The data provided for this valuation has been improved since the last valuation.

As a result of these checks, some of the information received was corrected, missing information was located and some persons were reclassified.

The salaries received in 1982 were increased to obtain annual salary rates as at January 1st, 1983. This increase was made by assuming that increase in salaries during 1982 occurred in accordance with the assumptions made for future increases in salaries.

Some employees were participating in the Insurance Plan for only part of 1982. For these employees, the salary received was increased to reflect the salary that would have been received had the employee been a member of the Insurance Plan throughout 1982.

3. Operation of the Plan

The Insurance Plan for employees and officers of participating municipalities and quasi-municipalities in Manitoba is administered in accordance with the Municipal Act and Regulations thereunder. Retired and disabled employees can be insured if they are members of the Pension Plan and if they were insured under the Insurance Plan as employees. This insurance protection is provided by The Prudential Assurance Company Limited (Prudential) under Group Policy No. GR 11344.

Accidental death and dismemberment insurance protection is provided to employees participating in the Insurance Plan. Employees who are retired or disabled are not eligible for this benefit. This insurance protection is also provided under Group Policy No. GR 11344.

Each employee who is participating in the Insurance Plan is insured for 200% of annual earnings. At employee's option, the life insurance protection can be reduced to 100% of the annual earnings. The amount of life insurance protection provided to employees who are employed on a part-time basis is based on the annual earnings in the previous calendar year.

A retired employee is insured for the following proportions of the pre-retirement amount of life insurance protection:

Attained Age	% of Pre-Retirement Insurance Protection
Less than 65	50%
65 to 69	25%
70 and over	$1,000 (fixed amount)

A retired employee may elect to cease making contributions prior to age 70. Such retired employee will be insured for an amount of $1,000 for life.

Each employee insured under the Insurance Plan who becomes totally disabled continues to be insured for the amount of life insurance protection which was in effect on the date the employee became totally disabled. This life insurance protection continues in effect until the employee's normal retirement date. If a disabled employee continues to be totally disabled until age 65, his life insurance protection will decrease. After age 65 the disabled employee will be insured for the following proportions of the pre-disability amount of protection:

Attained Age	% of Pre-Disability Insurance Protection
65 to 69	25%
70 and over	$1,000 (fixed amount)

A disabled employee may elect not to make contributions to the Insurance Plan after age 65. Such an employee will be insured for an amount of $1,000 for life.

The amount of accidental death and dismemberment insurance protection provided to each employee is equal to the amount of life insurance protection which is provided. Accidental death and dismemberment insurance protection is not provided to retired employees.

Contributions are made to the Insurance Plan at a rate of 20.23¢ bi-weekly (44¢ monthly) per $1,000 of life insurance protection provided to employees. This rate of contribution provides all of the benefits promised including accidental death and dismemberment insurance. No contributions are made for life insurance protection provided to disabled employees who are under age 65. Disabled employees over age 65 are considered to be retired employees.

Retired employees insured under the Insurance Plan contribute at rates which vary by age, as follows:

Age	Monthly Contribution per $1,000 of Insurance Protection
Less than 65	44¢
65 to 69	88

No contributions are required from retired employees who elect the option of $1,000 insurance protection after retirement. Retired employees over age 70 make no contribution for the $1,000 insurance protection.

The contributions for employees' insurance protection are shared between the employees and their employers or totally paid for by their employers. Up to two-thirds of the contributions are paid by employees. At least one-third of the contributions is paid by participating municipalities.

Participating municipalities do not make any contributions for retired employees life insurance protection.

All contributions are remitted to the Fund.

Financial Arrangements with Prudential

Group Policy No. GR 11344 describes the financial arrangements between the Board and Prudential. These consist of:

(a) the premium rates which are to be paid for each type of insurance,

(b) the charges made by Prudential for the services it provides,

(c) the method to be used to determine experience refunds or deficits, and

(d) the effect which termination of the Policy has on the amounts paid and received.

Effective January 1st, 1983, the premiums paid to Prudential are as follows:

(a) Life Insurance

- 15.63¢ bi-weekly (34¢ monthly) per $1,000 of life insurance protection provided to employees, plus

- $1.67 per month per $1,000 of life insurance protection provided to retired employees.

(b) Accidental Death and Dismemberment Insurance

- 2.30¢ bi-weekly (5¢ monthly) per $1,000 of insurance protection provided to employees.

The premium rates for life insurance protection are calculated annually. These premium rates remain in effect for the period from April 1st to March 31st of the following year.

The Policy requires Prudential to tabulate each year, the amounts credited to and charged against the Policy as a result of life insurance protection provided during the policy year just completed. The amounts credited to the Policy consist of the following amounts:

(a) premiums paid to Prudential for life insurance protection during the policy year,

(b) interest credited to the surplus held by Prudential on behalf of the Board, if any, and

(c) any deficit written off by Prudential. The amount written off is equal to the accumulated deficit to the end of the policy year, less the premiums paid to Prudential during the policy year.

The amounts charged against the Policy during each policy year consist of the following charges:

(a) death claims incurred under the Policy,

(b) conversion charges,

(c) charges made for services provided,

(d) premium taxes,

(e) a stop-loss charge, and

(f) a pooling charge.

The claims incurred under this Policy include the payments made on the death of employees, retired employees or disabled employees. Payments made as a result of accidental death or dismemberment are excluded.

Conversion charges are assessed if an employee elects to retain his insurance when it reduces on retirement or when he terminates employment.

The charge made for the services provided by Prudential consists of a charge of $75 per claim, a policy fee of $300 per year, and a charge of 1% of premium for general administration and profit. The actual amount of taxes assessed by the Province on insurance premiums is tabulated and charged. A stop-loss charge equal to .25 of 1% of the premiums paid during the policy year is assessed. This stop-loss charge ensures that any accumulated deficit at the end of any period in excess of the annual premium is not charged to the Policy. In addition, a pooling charge equal to .25 of 1% of the premiums paid during the policy year is assessed.

The surplus (deficit) for the year is equal to the premiums paid during the year for life insurance protection less the amounts charged against the Policy during the year.

Any surplus (deficit) produced during the year is credited (charged) to the Claims Fluctuation Reserve held by Prudential. The Claims Fluctuation Reserve belongs to the Board. The balance of the Claims Fluctuation Reserve is credited (or charged) with interest. The rate of interest credited to this Reserve is the rate "applicable to short-term commercial paper". The portion of any surplus, which will cause the Claims Fluctuation Reserve to exceed 50% of the premiums paid during the policy year just completed, is paid as an experience refund. The portion of any deficit, which will cause the Claims Fluctuation Reserve to exceed 100% of premiums paid during the policy year just completed, is written off by Prudential.

All contributions are remitted to the Fund.

The premiums for insurance protection are paid out of the Fund.

The amounts remitted to Prudential are based in part on the claims experience. These amounts may also change when there is a significant change in the distribution of insurance by age and sex. For example, the amount remitted in respect to retired employees increases as the average age of retired employees increases.

If this Policy is terminated, the surplus or deficit is calculated just the same as if the Policy was still in effect. If on the final settlement date there is a surplus after taking into account any surplus or deficits carried forward from prior years, Prudential will pay the amount of the surplus as a final settlement. If there is a deficit, Prudential will be responsible for that deficit.

The experience under the accidental death and dismemberment part of the Policy is fully pooled. There is no experience rating for this benefit. This is done because actual experience is less reliable where only a few claims are expected each year. The surplus or deficit under the Policy is determined after first excluding the amounts credited to or charged against the Policy in respect of the accidental death and dismemberment insurance protection.

In summary, the financial arrangement with Prudential for the life insurance part of Policy has the following features:

(a) A surplus (deficit) is determined by deducting the amounts charged against the Policy from the premiums paid.

(b) A surplus is credited to the Claims Fluctuation Reserve. A deficit is charged to the Claims Fluctuation Reserve.

(c) Interest is credited (charged) on the balance held in the Claims Fluctuation Reserve from the end of the policy year to the end of the following policy year.

(d) Amounts are paid to the policyholder when the Claims Fluctuation Reserve exceeds 50% of premiums. Interest is added to any amounts paid to the policyholder from the end of the policy year to the date the surplus is paid by Prudential.

(e) Amounts are written off by Prudential when the deficit held in the Claims Fluctuation Reserve exceeds 100% of premiums.

(f) Any surplus which emerges as a result of favourable claims experience occurring after the Policy terminates is refunded to the policyholder; any deficit is the responsibility of Prudential.

4. Membership of the Insurance Plan

The information supplied indicated that the membership of the Insurance Plan as at January 1st, 1983 was as follows:

	Age Group	Males	Females	Total
(a) Employees	Less than 20	3	1	4
	20 - 24	58	43	101
	25 - 29	115	48	163
	30 - 34	139	29	168
	35 - 39	125	36	161
	40 - 44	116	44	160
	45 - 49	132	19	151
	50 - 54	139	23	162
	55 - 59	122	17	139
	60 or over	109	19	128
		1,058	279	1,337
(b) Retired employees	Less than 55	-	-	-
	55 - 59	2	-	2
	60 - 64	13	4	17
	65 - 69	42	3	45
	70 - 74	8	-	8
	75 - 79	1	-	1
		66	7	73
(c) Disabled employees		11	-	11
		1,135	286	1,421

The following table shows the amounts of group life insurance in force as at January 1st, 1983, under the Insurance Plan:

	Males	Females	Total
(a) Employees	$46,695,796	$8,195,806	$54,891,602
(b) Retired Employees	435,866	81,920	517,786
(c) Disabled Employees	348,887	-	348,887
Total	$47,480,549	$8,277,726	$55,758,275

5. Actuarial Assumptions

The results contained in this Report are based on assumptions made in respect to those factors which will affect the status of the Fund, the level of contributions required or the premium rates charged in future years.

The factors which are of financial significance are:

(a) the rate of return which will be earned on the assets of the Fund,

(b) the rates at which salaries increase,

(c) the incidence of death while insured,

(d) the incidence of retirement,

(e) the incidence of termination of employment,

(f) the incidence of becoming disabled,

(g) the value of benefits expected to be paid to an employee who becomes disabled,

(h) the charges for converting group life insurance to individual life insurance,

(i) the expense of administering the Insurance Plan, including the amounts retained by Prudential, and

(j) the incidence of accidental death and dismemberment while insured.

A complete study of experience was made for the 1983 Pension Report. Where applicable, the results of the study of the actual experience of the Pension Plan have been used for this Report.

A description of the assumptions which have been adopted for this Report follows (a summary and examples of the assumptions is included in Section 6 of this Report):

(a) Rate of Return on the Assets of the Fund

As at December 31st, 1982, the assets of the Fund consisted of cash in the bank, prepaid insurance premiums, plus the accounts receivable, less the accounts payable.

The rates of return earned on the assets of the Fund each year during the last 6 years were calculated. The average of these rates is equal to 20.62% per year.

Rates of return were calculated using the book value of the assets and the investment income earned during each year. The method used to calculate the rates of return assumed that all deposits to the Fund or withdrawals from the Fund occurred on July 1st of each year. In fact, the Fund had cash deposit fluctuated from month to month. For this reason, the calculated rates of return are not a good indicator of the rates of return actually earned over the period. An average rate of interest of 10.25% per year was being credited by chartered banks in Canada on amounts on deposit in non-chequing acounts over the 6-year period ending December 31st, 1982. This rate of interest is more representative of the rate of return earned by the assets of the Fund over this 6-year period.

The Fund is expected to grow in the future. A large portion of this growth will be invested in longer term investments. The Fund is likely to be invested in bonds and possibly other evidences of debt such as guaranteed investment certificates. Therefore, the effects of making longer term investments must be considered in determining the rate of return to be assumed. The rate of return assumed in an actuarial valuation should represent a reasonable balance between current investment rates and the level of investment earnings expected to be realized over the long term.

A good indication of the rates of return likely to be available in future years can be obtained from a survey of the rates which have been available over a period in the past. It is important that the period studied be long enough to include the effect of a variety of economic conditions, and therefore we have used the 20-year period ending December 31st, 1982.

A period as long as 20 years allows the effect of a variety of economic conditions to be reflected in the result obtained. It eliminates fluctuations and distortions which can occur over shorter periods of time, due to business conditions and government controls.

If all of the amounts available for investment had been invested in bonds of varying terms to maturity, the average rate of return would have been approximately 9.20% per year.

It is desirable to make allowance for the possibility that the rates of return which are available in the future will be less than the rates of return which were available during the 20-year period.

On the basis of the foregoing considerations it is reasonable to anticipate that the Fund will earn a rate of return of at least 9.00% per year, on average, in the future.

The rate of return obtained on new investments is affected by the anticipated decrease in the purchasing power of money. During these 20 years, there was a significant decrease in the purchasing power of money. This decrease in purchasing power can be measured by calculating the annual percentage increase in the Consumer Price Index. Over the 20-year period, the Consumer Price Index increased at the rate of 6.53% per year.

This decrease in purchasing power has had an effect on the rates of return obtained on fixed income investments. Knowledgeable investors have sought to offset this decrease by charging rates of interest which, on average, make allowance for the expected annual decrease in the purchasing power of money during the term of the investment. This allowance is added to the real rate of return desired by the investor to produce the rate of interest charged on that type of investment.

As a result, the assumed rate of return is made up to 2 components - the allowance for inflation, and the desired real rate of return.

If the inflationary component in the assumed rate of return of 9.00% is 6.50%, the real rate of return is expected to be 2.50% per year.

There are 2 reasons for identifying the 2 parts of the assumed rate of return. These are:

(i) the assumed rate of return is based on an assumption as to future economic conditions. So, also, is the assumption made as to the rate at which salaries will increase in future years. Consequently, in order to ensure consistency, the same allowance for inflation, i.e. 6.50% per year, is used in developing both actuarial assumptions, and

(ii) by identifying the real rate of return, a good indication can be obtained of the significance of the assumed rate in other than average economic conditions. The assumption of a real rate of return of 2.50% per year implies that investments obtained for the Fund are expected to yield a rate of return of 2.50% per year in excess of the average rate of inflation during the period these investments are held.

(b) Rates of Salary Increase

Salary increases occur as a result of:

(i) general increases. This increases in salary is granted to groups of employees and reflect changes in economic conditions.

(ii) service, merit or promotional increases. These increase in salary are granted on an individual basis to recognize an employee's service and increased value to the municipality.

Each class of increase is considered separately in developing the rates at which salaries can be expected to increase in the future:

(i) General Increases in Salary Levels

The 2 components of general increases in salaries are:

(A) the inflationary component. Employees seek increases in salary in order to offset any decreases in the purchasing power which is caused by inflation.

(B) the productivity component. Increased productivity results in an increase in the real value of the goods and services produced per employed person. The economic benefits of these productivity increases are passed on to employees as increases in salaries which enable increases in the standard of living to occur.

The inflationary component of future increases in salaries should be the same as the inflationary component included in the rate of return assumed to be earned on the Fund in future years. As explained in the previous subsection of this Report, the period used requires the allowance made for inflation in the future to be at the rate of 6.50% per year.

The productivity component is based on a study of increases in the average earnings of employed persons in Canada during the 20-year period prior to December 31st, 1982 adjusted by deducting the inflationary component from these increases. The productivity component has decreased throughout the last part of this period. As a result, allowance has been made for the likelihood that productivity increases will be lower in the future than they have been over the long term in the past. On the basis of these considerations, an allowance of 1.00% per year was made for the productivity component of general salary increases.

The expected general increase in salary is obtained by adding together the increases expected to occur in each component. On that basis, general increases in salary are expected to occur at a rate equal to 7.50% per year in future on average, this rate consisting of an average anticipated productivity increase of 1.00% per year plus an allowance for future inflation at the rate of 6.50% per year.

(ii) Service, Merit and Promotional Increases.

Rates of increase in earnings due to service, merit and promotional increases were studied for the 1983 Pension Report. For the purposes of this Report, the same rates as used in the 1983 Pension Report have been adopted.

(c) Incidence of Death While Insured

(i) Death in Service

The actual number of death claims experienced during the period to December 31st, 1982 was compared to the number of claims expected on the basis of the rates used in the 1980 Report. This comparison is summarized in the following table:

	01/01/80 - 31/12/82			01/01/77 - 31/12/82		
	Actual	Expected	Ratio	Actual	Expected	Ratio
Males	13	16	81 %	21	28	75%
Females	2	2	100	2	3	67

Over the entire period, the ratios of the number of actual deaths to the number of expected deaths were 75% and 67% for males and females respectively.

The results indicate that expected rates of mortality for males should be reduced to more closely reflect the experience.

The reduction in the assumed rate of mortalitly for males in each age group is equal to 25% of the difference between the rates based on expected experience and actual experience over the entire period studied.

The experience for female employees is not sufficient to produce a reliable indication of expected mortality. Information was available concerning rates of mortality which have been found to be applicable to employees insured under group life insurance plans in Canada. These rates of mortality for females, reduced by 12%, were used in the 1980 Report.

We have taken a proportion of these rates of mortality for use in this Report. We assumed that an 18% reduction on these rates of mortality is applicable. This reflects the decrease in rates of mortality being experienced in other group insurance plans.

On the basis of the rates of mortality used, the actual number of deaths were 81% of the number expected amongst males and 72% of the number expected amongst females.

(ii) Death after Retirement

Separate rates of mortality are applicable to:

(A) employees who retired in at least average health, and

(B) employees who retired due to total disability.

The experience amoung these 2 groups is described below:

(A) Employees who Retired in at Least Average Health

The actual number of deaths experienced among retired employees receiving pension payments under the Pension Plan during the period to December 31st, 1982 was compared to the number of claims expected on the basis of the rates assumed in the 1980 Report. This comparison is summarized in the following table:

	01/01/80 - 31/12/82			01/01/77 - 31/12/82		
	Actual	Expected	Ratio	Actual	Expected	Ratio
Males	6	4	137%	8	5	151%
Females	0	<1	N/A	1	<1	N/A

The experience accumulated under the Insurance Plan was not sufficient to produce reliable information. As a result, it was decided to use the same mortality rates as were used for the 1980 Report. These rates are obtained from standard mortality tables which have been found to be suitable for other groups of pensioners in the public sector where the data is sufficient to produce reliable results.

Use of these rates is justified when the actual experience for employees is compared to the experience reported to date amongst retired employees.

(B) Employees who Retired due to Total Disability

The mortality experience among employees who retired due to total disability was studied for the 1983 Pension Report. The same rates of mortality as used for the 1983 Pension Report have been used for this Report.

These rates are the same as were used for the 1980 Report.

(d) Incidence of Retirement

The rates of retirement were studied for the 1983 Pension Report. These rates reflect the possibility of retirement for reasons other than disability.

We have assumed the same rates of retirement as were used in the 1983 Pension Report.

(e) Incidence of Termination of Employment

For the 1983 Pension Report, a study was made to develop annual rates of termination of employment leading to a lump-sum payment or a deferred pension. these rates have been used in this Report with the following modifications.

A separate study has been made to determine the effect which the length of service has on the rates of termination. It has been found that rates of termination applicable to employees with shorter periods of service are greater than the rates of termination applicable to employees with longer periods of service. The relationship between the rates of termination at the same age for persons of the same age who have longer periods of service can be expressed in terms of ratios. For example, it has been found that for employees who have completed one year of service, but less than 2 years of service, the rates of termination are approximately 60% greater than those rates applicable to persons who have completed at least 5 years of service. Factors were developed similarly to provide the relationship between the rates of termination among employees with 2 but less than 3 years of service, 3 but less than 4 years of service and 4 but less than 5 years of service, each compared to the rates of termination among employees with at least 5 years of service.

The factors developed in this study were adopted for this Report.

(f) Incidence of Disability

For the 1980 Report, information was available concerning claims made under the waiver of premium benefit provided in group life insurance policies. The basic rates, which were for all industries combined, were adjusted by factors to obtain the experience under policies issued to local state and provincial governments.

A comparison was made of the actual number of disability claims during the period January 1st, 1977 to December 31st, 1982 to the claims expected on the basis of these adjusted rates.

This comparison is summarized as follows:

	01/01/80 - 31/12/82			01/01/77 - 31/12/82		
	Actual	Expected	Ratio	Actual	Expected	Ratio
Males	8	4	200%	12	7	169%
Females	N/A	N/A	N/A	N/A	N/A	N/A

The experience accumulated was not sufficient to produce reliable information. The experience will be affected by recoveries. Some recoveries are expected since many of the claims occurred in the last 3 years. Therefore, we have assumed the same rates of disability as were used in the 1980 Report.

(g) Value of Waiver of Contributions Benefit

If an employee becomes totally disabled, he is eligible for a waiver of contributions benefit. This benefit permits the continuation of an employee's insurance up to age 65. At age 65 the employee's insurance reduces to 25% of its former amount and at age 70 it reduces to $1,000. The contributions which the employee would otherwise make are waived up to age 65. After age 65 he contributes at the same rate as a retired employee.

The following assumptions were used to determine the value at the date of disability of the expected benefits and contributions. The value is based upon the termination rates (recovery and death) contained in the 1970 Group Life Premium-Waiver Valuation Table. The rates contained in this table are based upon the combined experience of 12 major life insurance companies. These rates were used to estimate the likelihood, at each duration of disablement, that a disabled person will recover or die while his insurance is in force.

(h) Conversion Charges

The following procedure was used to evaluate the likelihood that an employee will convert his group life insurance to individual life insurance if his insurance is terminating or being reduced.

Over the 3-year period ending December 31st, 1982, there were no conversions to individual policies amongst employees under the Insurance Plan whose insurance decreased or terminated.

It has been assumed that the conversion privilege will be chosen by about one employee out of every 1,000 employees who have an opportunity to convert their life insurance.

It was anticipated that a special charge would be made for each $1,000 of life insurance converted. The amount of the conversion charge is made in accordance with the schedule actually used by Prudential.

(i) Administrative and Other Charges

(i) Civil Service Superannuation Board and Actuarial Fees

The Municipal Employees Benefits Board entered into an agreement with the Civil Service Superannuation Board to provide administrative services to The Municipal Employees Benefits Board with regard to its Pension Plan and Group Insurance Plan operations. In accordance with the terms of the agreement, The Municipal Employees Benefits Board reimburses the Civil Service Superannuation Board for the cost of these services. The amount of this cost is shown in total for the Insurance Fund part and the Pension Fund part of the Manitoba Municipal Employee Benefits Fund.

To date, none of these costs have been paid out of the Insurance Fund. This was a logical approach since a very large part of the costs incurred were not affected by the existence of the Insurance Plan. We expect that this practice will change as recognition is given to the ongoing work created by the Insurance Plan.

We have assumed that, in future, 10% of the amounts charged by the Superannuation Board will be paid out of the Insurance Fund. This percentage is based on the relationship of contributions for group insurance to total contributions.

In addition, the Insurance Fund is expected to pay all actuarial fees which are attributable to the Insurance Plan. In the past, these fees have been charged to the Insurance Fund.

It has been anticipated that the share of expenses charged to the Insurance Fund will be equal to $9,000 per year in each of the next 3 years. This is equivalent to 3% of contributions.

(ii) Prudential

The charges assessed by Prudential for the services it provides are the sum of the following amounts:

(A) Claims and administrative expenses consisting of:

(1) A charge of $75 per claim.

(2) A policy fee of $300 per year.

(3) A charge of 1.00% of premium for general administration and profit.

(B) Risk charges consisting of:

(1) A stop-loss charge of .25 of 1% of premium.

(2) A charge for partial pooling loss on termination under the stop-loss level of .25 of 1% of premium.

(C) Provincial premium taxes of 2% of the excess of premiums over experience refunds.

It has been anticipated that these charges will continue to be in effect in future policy years.

(j) Incidence of Accidental Death and Dismemberment While Insured

Over the 6-year period ending December 31st, 1982, there was one accidental death and dismemberment claim under the Insurance Plan.

The incidence of accidental death or dismemberment among eligible employees is based upon a study of the claims experience of 17 large life insurance companies. The experience was obtained on policies providing benefits on accidental death during the period from 1951 to 1956.

It has been assumed that the mortality rates contained in this table would be suitable if adequate allowance is made for the possibility of dismemberment and disablement claims. For the 1980 Report, allowance was made for these types of claims by increasing the rates of mortality obtained from the inter-company study by 10%. For the purposes of this Report, we have assumed the same rates as were used for the 1980 Report.

6. Summary of Actuarial Assumptions Used in this Report

(a) Rate of Return on the Assets of the Fund - 9.00% per year.

(b) Rates of Increase in Salaries (including an allowance of 7.50% per year for future general increases in salary levels).

Average Annual Increases in Salaries

Age Group	Males	Females
20 - 25	13.5%	11.1%
25 - 30	10.9	10.2
30 - 35	10.2	9.2
35 - 40	9.4	9.0
40 - 45	9.0	8.8
45 - 50	8.8	8.6
50 - 55	8.3	8.1
55 - 60	8.0	8.0
60 - 65	7.9	7.9

(c) Incidence of Death While Insured

(i) Annual Rates of Death in Service (for selected ages):

Attained Age	Males	Females
20	.001394	.000697
25	.000967	.000484
30	.000803	.000402
35	.001008	.000504
40	.001714	.000857
45	.003034	.001517
50	.005101	.002550
55	.008109	.004055
60	.013055	.006528
64	.019196	.009598

(ii) Annual Rates of Death After Retirement (for selected ages):

Attained Age	Non-Disabled		Disabled	
	Males	Females	Males	Females
40	N/A	N/A	.0756	.0403
50	N/A	N/A	.0674	.0359
60	.0138	.0066	.0713	.0380
70	.0351	.0159	.0971	.0518
80	.0855	.0530	.1749	.0933
90	.2085	.1730	.3473	.1852
100	.4634	.4494	1.0000	1.0000

(d) Annual Rates of Retirement for Reasons other than Disability (for selected Ages):

Attained Age	Males	Females
55	.005	.010
56	.005	.010
58	.008	.017
60	.028	.055
62	.061	.110
64	.115	.152
65	1.000	1.000

(e) Termination of employment

(i) Annual rates of termination applicable to members with 5 or more years of service (for selected ages):

Attained Age	Males	Females
20	.109	.226
25	.081	.203
30	.057	.143
35	.042	.083
40	.028	.047
45	.020	.036
50	.011	.024
54	.007	.014

(ii) The rates of termination applicable to members with less than 5 years of service were obtained by multiplying the above rates by the appropriate factor from the following table:

Service	Factor Applied to Termination Rates
Less than 1 year	2.00
1 but less than 2 years	1.60
2 but less than 3 years	1.40
3 but less than 4 years	1.25
4 but less than 5 years	1.10

(f) Annual Rates of Becoming Disabled (for selected ages):

Attained Age	Males	Females
22	.000046	.000018
27	.000063	.000063
32	.000127	.000073
37	.000199	.000145
42	.000417	.000263
47	.000807	.000417
52	.001650	.000789
57	.004162	.001950
62	.003808	.002448

(g) Value of Waiver of Contribution Benefit:

Attained Age	Value of waiver of contributions benefit at approval of disability (per $1,000 of insurance)
22	$108
27	164
32	216
37	261
42	305
47	345
52	365
57	346
62	189

(h) Charges for Converting Group Insurance to Individual Insurance:

It has been assumed that out of each 1,000 terminations one person will elect to convert his group life insurance to individual life insurance and that Prudential will levy a conversion charge per $1,000 of life insurance converted in accordance with the following schedule:

Attained Age	Conversion Charge per $1,000 of Life Insurance
Less than 25	$ 25
25 - 29	30
30 - 34	40
35 - 39	55
40 - 44	70
45 - 49	100
50 - 54	135
55 - 59	155
60	170
61	180
62	185
63	190
64	200
65	205

(i) Administrative and Other Charges:

(i) Civil Service Superannuation Board and Actuarial Fees

- charge equal to $10,700 per year for each of the next 3 years.

(ii) Prudential

- charge equal to the sum of:

  - $75 per claim, plus
  - $300 policy fee, plus
  - 1% of premium for general administration and profit, plus
  - .25 of 1% of premium stop-loss charge, plus
  - .25 of 1% of premium partial pooling charge, plus
  - 2% of premium less refund for premium taxes.

(j) Annual Rates of Accidental Death and Dismemberment (for selected ages):

Attained Age	Rates
20	.000639
30	.000327
40	.000328
50	.000398
60	.000533

7. Valuation Results - Present Members of the Plan

The benefits provided by the Insurance Plan are financed in part by the payment of premiums and in part by the retention of amounts in the Insurance Fund.

The Fund is responsible for the payment of:

(a) premiums to the insurer when an insured employee becomes totally disabled,

(b) the portion of the premiums not financed by the contributions made by retired employees,

(c) the expenses incurred by the Municipal Employees Benefits Board,

(d) the amount, if any, by which any of the premiums exceed the contributions.

The Fund fulfills these responsibilities by:

(a) utilizing assets created as a result of favourable claims experience in the past, and

(b) retaining any difference if the contributions are greater than the premiums.

The Valuation Balance Sheet which follows indicates the relationship between the assets and the liabilities of the Fund. The portion of the contributions which are paid in premiums are shown only if, by showing them, the financial position of that portion of the Fund is affected.

The actuarial valuation is the process whereby this relationship is quantified. The present value of the liabilities of the Fund is determined separately for each benefit which the Fund provides. For each participant of the Fund, the probability of a benefit becoming payable at each age and the amount of that benefit is determined on the basis of the actuarial assumptions outlined in the previous section of this Report. The probability is multiplied by the amount of the benefit in order to determine the expected amount of benefit at each age. This is multiplied by a discount factor to deduct the portion of the benefit which it is expected will be financed by future investment earnings. Through this process, the present value of the benefit which each member could receive at each possible age in the future is determined. The resulting present values are added together to produce the amounts shown as liabilities on the Valuation Balance Sheet.

The present value of the contributions which are expected to be received in the future from the present members of the Fund are valued in a similar way. The expected contributions for each year in the future are multiplied by the probability, based on the actuarial assumptions, that the employee will still be participating in the Insurance Plan at each age in the future and by a discount factor. The results are added together to produce the value of future contributions shown as assets on the Valuation Balance Sheet.

The Valuation Balance Sheet reflects the financial position with respect only to the present participants of the Fund. While new contributors will affect the financial position, the number of these and their distribution by age, sex and amount of insurance is much less easy to predict than the other factors taken into account in the valuation.

The following Balance Sheet anticipates that the relationship between the contributions, paid by employees or other persons participating in the Insurance Plan and on their behalf by participating employers, and the premiums paid to Prudential will remain the same as it existed at the time this Report was prepared.

Insurance Fund of the
Group Insurance Plan for Employees of
Participating Municipalities in Manitoba
Valuation Balance Sheet
as at January 1st, 1983

ASSETS	
Cash in Bank	$ 49,548
Accrued Bank Interest	599
Contributions Receivable	21,757
Prepaid Insurance Premiums	5,342
Value of Future Contributions:	
- in excess of the premiums required to provide insurance protection	420,000
- after retirement by those already retired	13,900
- after retirement by future retireds who are not disabled	321,100
- after retirement by future retireds who are disabled	32,100
Total Assets	$ 864,346
Less:	
LIABILITIES	
Accounts Payable	$ 23,198
Value of Insurance Benefits provided After Future Retirements	873,100
Value of the Waiver of Future Contributions in the event of Total Disability	389,200
Value of Future Insurance Benefits for already disabled employees	118,800
Value of Future Insurance Benefits for already retired members	59,800
Value of Future Administration Expenses during next 3 years	23,800
Total Liabilities	$1,487,898
DEFICIT	$ 623,552

8. Analysis of Valuation Results

This is the second valuation of the Insurance Fund. The first valuation of the Insurance Fund indicated that there was a deficit of $373,709 as at January 1st, 1980. This valuation indicates that there is a deficit of $623,552 as at January 1st, 1983.

The principal reason for the deficit is the initial unfunded liability created when the Insurance Plan commenced.

For employees who became participants of the Insurance Plan at the date the Insurance Plan commenced, an initial unfunded liability was created since contributions will be made on behalf of these participants only for a portion of their working lifetime. As the Fund grows, the importance of this initial unfunded liability is decreasing. The deficit as at January 1st, 1980 was equal to 58% of the total liabilities on that date. The deficit as at January 1st, 1983 is equal to 42% of the total liabilities on that date.

This Report assumes that all participants who remain in the Plan until retirement will elect the maximum of post-retirement life insurance protection which they are eligible for. Retired employees may elect to reduce the amount of their insurance to $1,000 and pay no further contributions. Approximately one-third of the retired employees have elected to reduce their protection to $1,000. If one-third of employees who retire in the future can be expected to elect the $1,000 post-retirement insurance protection, the financial position of the Fund is improved by $156,000.

The contribution rate for employees was initially set at a level of 48.0¢ per month per $1,000 of insurance protection. To make the Plan more attractive to other potential participating employers, the contribution rate was decreased by 4.0¢ to 44.0¢ per month per $1,000 of insurance effective January 1st, 1979. This reduction in contribution has enabled the membership of the Insurance Plan to increase. Membership in the Insurance Plan increased from 804 employees as at January 1st, 1980 to 1,421 employees as at January 1st, 1983. This strengthens the Insurance Plan by spreading the cost over a larger number of participants and reducing the relative importance of fluctuations in the amount of claims in future years. The initial effect of the reduction in the contribution rate has been to increase the deficit. The beneficial effects of this change will become apparent in future valuations of the Insurance Plan.

Fluctuations in the amount of claims have occurred in the past, and can be expected in the future. The following table shows the premiums and death claims for 1980, 1981, and 1982:

	1980	1981	1982
Premiums:			
Employees	$ 99,352	$154,693	$197,243
Retired employees	902	1,636	11,142
	$100,254	$156,329	$208,385
Death Claims:			
Employees	$111,618	$130,000	$200,517
Retired employees	26,000	12,000	24,086
	$137,618	$142,000	$224,603
Difference	($ 37,364)	$ 14,329	($ 16,218)

There was a deficit equal to $46,219 under the Policy as at December 31st, 1982. Any deficit under the Policy is not an obligation of the Insurance Plan. The deficit is financed by favourable experience, if any, obtained in the future.

The assumptions used in this Report differ from the assumptions used in the 1980 Report.

The net effect of changing the assumptions caused the financial position of the Insurance Fund to improve by $316,900. The assumptions which have had the most significant effect on the results are the increases in the rate of return expected to be earned in the future and the reduction in the rates of mortality expected to occur in the future.

9. Premium Rates

The premium rates have been determined so that, if all of the assumptions adopted for this Report are realized exactly in the future, the amount paid to the insurer each month will be equal to the claims paid by the insurer in that month, plus the agreed upon charges made by the insurer for its services. The premium rates have been determined by using this procedure and the distribution of life insurance by age and sex as at January 1st, 1983.

The premium rates which result from this process are called anticipated premium rates.

The results of these calculations are as follows:

(a) Life Insurance

- Employees

  16.73¢ bi-weekly (36.38¢ monthly) per $1,000 of life insurance protection.

- Retired Employees

  $1.90 per month per $1,000 of life insurance protection.

(b) Accidental Death and Dismemberment Insurance

- Employees

  1.59¢ bi-weekly (3.46¢ monthly) per $1,000 of insurance protection.

There has been a reduction in the anticipated premium rate for employees life insurance protection from 41.5¢ monthly per $1,000 of insurance as at January 1st, 1980 to 36.4¢ monthly per $1,000 of insurance as at January 1st, 1983. There has not been a material change in the anticipated premium rate for retired employees life insurance protection or for accidental death and dismemberment insurance protection.

Some further decrease in the anticipated premium rate for employees life insurance protection should occur in future as a result of the participation of each employee hired after January 1st, 1977 as soon as the employee fulfills the eligibility requirements.

These anticipated premium rates can be compared to the premium rates currently being charged by Prudential.

(a) Life Insurance

- Employees - 34¢ per month per $1,000 of insurance protection.

- Retired Employees - $1.67 per month per $1,000 of life insurance protection.

(b) Accidental Death and Dismemberment Insurance

- 5¢ per month per $1,000 of insurance.

The premium rate currently being charged for employees life insurance protection is lower than the rate that is anticipated on the basis of the assumptions used in this Report. The premium rate is based in part on the actual experience obtained under the Policy. The actual experience has been more favourable than the experience expected using the rates of mortality assumed in this valuation.

The premium rate currently being charged for retired employees life insurance protection is based on Prudential's standard mortality rates. The experience expected using these rates of mortality is more favourable than the experience expected using the rates of mortality assumed in this Report.

There could be some reduction in the premium rate being charged for accidental death and dismemberment insurance protection.

10. Recommendations

(a) The existence of a deficit in the Insurance Fund should not be a cause for concern at this time. The significance of the deficit is decreasing. The deficit has reduced to 42% of the liabilities as at January 1st, 1983.

(b) The experience obtained under the Policy since January 1st, 1983 has been favourable. If this trend continues, the financial position of the Fund will show a further improvement in the next valuation.

This improvement is to be expected. There is a continuing increase in the proportion of eligible employees who are participating in the Insurance Plan. This increase is the result of the automatic participation of all new employees who fulfill the eligibility requirements.

There is also much less opportunity for employees and employers to select against the Plan, than there was at the time decisions were being made whether or not to particiapte in the Insurance Plan.

(c) Fluctuations in the amount of claims paid from year to year can cause the experience to be unfavourable in one period and favourable in the next.

The existence of a deficit increases the importance of favourable claims experience in the future to keep the contribution rates at their current level.

(d) Rates of investment income since January 1st, 1983 have been higher than the rate assumed in this Report. If this trend continues, the financial position of the Fund will show a further improvement in the next valuation.

(e) The financial position of the Insurance Fund and the sufficiency of the contribution rates should be determined as at January 1st, 1986.

We will be pleased to provide any additional information which may be required.

DATED at Winnipeg this fifteenth day of April, 1985.

Respectfully submitted,

John A. Turnbull.

Actuary